

A study of the photographs shows that the form of the comet's tail exhibits a recurring series of phases, and that the phase seems to bear a relation to the condition of the nucleus which passes through cycles of stages of alternating activity and quiescence.

At the stage of quiescence the comet presents the appearance of a nucleus with little enveloping coma, and straight streamers passing away at little inclination to the general direction of the tail. The coma then grows, envelopes form about the nucleus (on the side towards the Sun), and the rays of the tail become more spread. The stage of maximum activity is now reached, and larger quantities of matter appear to be expelled from the head and then driven back, forming a bright wavy tail, the streamers being no longer straight, but greatly disturbed. This bright tail then appears to be driven off and the stage of quiescence follows.

Much measurable detail is shown on the photographs, and the few tentative measures which have been made (see "Remarks") indicate that the matter forming the tail is moving from the head at an accelerating velocity. At present it is not possible to say more, but when the material has been fully discussed the results will be communicated to the Society.

Royal Observatory, Greenwich:
1908 November 9.

On the Photographs of Comet c 1908 (Morehouse).

By E. E. Barnard. (Plates 2, 3.)

This comet has shown very remarkable phenomena. In some respects they were quite different from those of any comet which has appeared since these bodies have been under photographic study. Even in its quieter phases it has been apparently as active as the larger naked-eye comets. There have, however, been several outbursts that were very extraordinary, and in some respects quite unique. The photographs show that these disturbances occurred on or about September 16, 30, October 1, 6, and 15. I have selected from these photographs the following list of lantern slides which accompany this note. I have separated them into three sets: in the first set the photographs were made with the 10-inch Brashear doublet, the second set with the 6-inch, and the third set (consisting of one plate) with the 3.4-inch doublet, all of the Bruce telescope of the Yerkes Observatory.

List of Lantern Slides of the Comet.

1st set, made with the 10-inch.

No.	Mid. Exposure C.S.T.		Duration of Exposure.	
	1908.	h m	h m	
1	Sept. 30	14 22	1 56	
2	Oct. 1	13 43	2 0	
3	2	14 59	2 49	
4	3	11 7	2 28	
5	6	15 58	1 24	
6	15	6 57	1 22	



1908 Sept. 30 d. 11 h. 16 m. C.S.T. (6-inch.)



1908 Sept. 30 d. 14 h. 57 m. C.S.T. (6-inch.)



1908 Oct. 6 d. 15 h. 58 m. C.S.T. (10-inch.)

COMET C 1908 MOREHOUSE.—E. E. BARNARD.



1908 Oct. 15 d. 6 h. 57 m. C.S.T. (10-inch.)



1908 Oct. 15 d. 7 h. 34 m. C.S.T. (3·4-inch.)

COMET C 1908 MOREHOUSE.—E. E. BARNARD.

2nd set, made with the 6-inch.

	1908.	h	m	h	m
7	Sept. 30	11	16	2	0
8	30	13	25	2	0
9	30	14	57	0	47
10	Oct. 1	8	45	0	50
11	1	10	48	1	0
12	1	11	55	1	0
13	1	13	15	1	5

3rd set, made with the 3.4-inch.

14	Oct. 15	7	34	2	36
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The times are 6^h 0^m slow of Greenwich.

I understand that an excellent series of photographs of the comet has been obtained at Greenwich. These photographs, if on the same dates as mine, will be of the highest importance in piecing out the history of some of the important changes. It is especially to be hoped that a good set of photographs were secured at Greenwich and elsewhere in Europe on September 30 and October 1, for comparison with pictures taken in other longitudes.

Up to the 22nd of this month I have made photographs of the comet on thirty-seven nights. A large number of these are beautiful pictures, and they are all of great interest.

Of this list, Nos. 1 and 2 are to appear in the *Astrophysical Journal* for November. No. 4 appears in *Popular Astronomy* (along with one on October 4). Nos. 5, 6, 7, 9, 14 are given with this paper (Plates 2 and 3).

Most unfortunately, an interruption has come in our good weather, and it may be that not many more pictures of the comet can be obtained at this observatory.

At present I will not call attention to the peculiarities of these photographs, which, I think, speak for themselves. I must, however, mention the photograph of September 16, which is not represented in these slides. In a very bad sky, in which the comet was scarcely visible in the guiding telescope on account of a very thick, smoke-laden atmosphere, the plates show the tail very long, broad, and violently curved in some parts through almost a right angle to its previous position. On the 17th the tail was again in its normal form and position. From the very poor sky, this picture, though of two hours' exposure, is very weak, and difficult to reproduce.

I must also specially mention the photographs of October 15. On that date I made five photographs each with the three lenses. The first exposure began at 6^h 18^m, and the last one ended at 13^h 28^m. The comet was, therefore, being photographed for over seven hours. After the first two exposures the Moon interfered, and from this cause the last three pictures are not so strong as the first ones. All the features, however, though not so strong, are

well shown. The junction of the narrow tail with the masses changed its position, while the cloud-like masses themselves changed their relative position angles, and apparently were moving faster southward than the comet. At the same time they were receding from it. In a changed form, they are still visible on the photographs of the 16th and 17th. What I wish specially to call attention to are the streamers or secondary tails that issue from these masses. They are specially well shown on slide 14 (with the 3·4-inch lens), reproduced on Plate 3.

It would appear from the light-pressure theory that the large receding masses consist of large and small particles, and that the smaller ones are being driven away from the others with a very much greater velocity by the pressure of the Sun's light. These smaller outgoing particles, therefore, form the streams or secondary tails shown going out from the masses.

Yerkes Observatory :
1908 October 24.

Note on Comet c 1908 (Moorhouse), 1908 September 29–October 2.
By the Rev. W. Sidgreaves, S.J., and the
Rev. A. L. Cortie, S.J.

The comet has been photographed on every available night since September 29 at the observatory with a Dallmeyer portrait lens of 6-inch aperture and 30-inch focal length, the generous gift of Mr. Whitelow, F.R.A.S. Pending a full discussion of the photographs, the more remarkable changes in the object between the dates named are set down here.

Plate.	Date of Middle of Exposure. G.M.T.	Length of Exposure. Minutes.		Length of Tail on Plates.
		h	m	
1	1908 Sept. 29	9	7·5	45
2	30	7	45	40
3	30	9	20	30
4	Oct. 1	7	42·5	35
5	1	8	47·5	55
6	1	11	21	30
7	2	10	47·5	55
				No tail

In the photographs of September 29, 30, the nucleus showed no central condensation, the tail was slightly curved on one side, and possessed a bright central core or axis. This bright central ray